Sustainable Systems SFA

Tackling Three Key Challenges that Hinder Predictive Understanding of Flow and Transport Through Complex Subsurface Systems by Considering the Nature and Interaction of Fundamental Mechanisms as well as their Macroscopic Manifestations

> LRM. Susan Hubbard Project Business Manager, Lisa Kelly

> > Modeling Lead, Carl Steefel

Challenge: **Unraveling Biogeochemical Pathways**

Lead, Harry Beller

Focus: Quantification of interrelated microbial metabolic and geochemical mechanisms

Site: Hanford 100H

LBNL Scientific Staff: Markus Bill. Foin Brodie, Shaun Brown, John Christensen, Mark Conrad, Boris Faybishenko, Jil Geller, Peter Nico, Eric Sonnenthal, Carl Steefel, Li Yang

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Collaborators: Adam Arkin (LBNL, UCB), Jim Fredrickson (PNNL). Yohisko Fuiita (INL), Allan Konopka (PNNL), and Scott Peterson (CH2M Hill)

Challenge:

Evolution of Pore Structures and Flowpaths

Lead, Ken Williams

Focus: Quantification of feedbacks between biogeochemical transformations and flow characteristics

Site: Rifle (IFRC)

LBNL Scientific Staff: Eoin Brodie. Jonathan Ajo-Franklin, Jinsong Chen, Mark Conrad, Don DePaolo, Hoi-Ying Holman, Susan Hubbard, Mike Kowalsky, Peter Nico. Dimitris Silin. Carl Steefel. Tetsu Tokunaga, Yuxin Wu, Li Yang

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Collaborators: John Barger (SLAC), Li Li (Penn State), Phil Long (LBNL), Bill Moses (LBNL), and the Rifle IFRC Team

Challenge: **Predicting Contaminant Mobility at**

the Plume Scale Lead, Jim Davis

Focus: Development of approaches for integrating geochemical mechanisms with hydrogeological heterogeneity for tractable plume-scale predictions

Site: Savannah F-Area

LBNL Scientific Staff: Jinsong Chen. John Christensen, Wen Ming Dong, Patricia Fox, Susan Hubbard, Peter Nico, Nic Spycher, Will Stringfellow, Jiamin Wan

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